National Institute of Environmental Health Sciences

The effect of heat waves on hospital admissions for renal disease in a temperate city of Australia

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Abstract:

Background A rarely investigated consequence of heat exposure is renal dysfunction resulting from dehydration and hyperthermia. Our study aims to quantify the relationship between exposure to extreme high temperatures and renal morbidity in South Australia. Methods Poisson regression accounting for over dispersion, seasonality and long-term trend was used to estimate the effect of heat waves on hospital admissions for renal disease, acute renal failure and renal dialysis over a 12-year period. Selected comorbidities were investigated as possible contributing risk factors. Results Admissions for renal disease and acute renal failure were increased during heat waves compared with non-heat wave periods with an incidence rate ratio of 1.100 [95 confidence intervals (CI) 1.0031.206] and 1.255 (95 CI 1.0371.519), respectively. Hospitalizations for dialysis showed no corresponding increase. Comorbid diabetes did not increase the risk of renal admission, however effects of heat and light and exposure to excessive natural heat (collectively termed effects of heat) were identified as risk factors. Conclusion Our findings suggest that as heat waves become more frequent, the burden of renal morbidity may increase in susceptible individuals as an indirect consequence of global warming.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Diabetes/Obesity, Urologic Effect

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified